

Amendments to the Claims:

This listing of claims replaces all prior versions, and listing, of claims in the application.

Listing of Claims:

Claim 1. (Cancelled)

Claim 2. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 4 wherein the ~~inorganic~~ antimicrobial agent ~~comprises a~~ metal or metal ion is selected from the group consisting of silver, copper, zinc, tin, gold, mercury, lead, iron, cobalt, nickel, manganese, arsenic, antimony, bismuth, barium, cadmium, chromium, thallium and combinations thereof.

Claim 3. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 2 wherein the antimicrobial metal or metal ion is silver, zinc, copper or a combination of any two or all three of the foregoing.

Claim 4. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 63 wherein the inorganic antimicrobial agent is selected from the group consisting of antimicrobial metal salts, antimicrobial water soluble glasses, antimicrobial metal ion-exchange type agents comprising a ceramic carrier having ion-exchanged antimicrobial metal ions and combinations thereof.

Claim 5. (Cancelled)

Claim 6. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 5 wherein the ceramic carrier is selected from the group consisting of zeolites, hydroxyapatites, and zirconium phosphates.

Claim 7. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 6 wherein the antimicrobial agent is a zeolite that contains silver ions alone or in combination with zinc ions or copper ions or both.

Claims 8 and 9. (Cancelled)

Claim 10. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 63 + wherein the hydrophilic polymer is a polymer with water absorption at equilibrium of at least about 20% by weight.

Claim 11. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 63 + wherein the hydrophilic polymer is selected from the group consisting of polyhydroxyethyl methacrylate, polyacrylamide, N-vinyl-2-pyrrolidinone, polysaccharides, polylactic acid, polyamide and polyurethane.

Claim 12. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 11 wherein the hydrophilic polymer is polyurethane.

Claim 13. (Cancelled)

Claim 14. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 63 + wherein the microcapsule contains from 10 to 200 parts by weight of antimicrobial agent based upon 100 parts by weight of hydrophilic polymer.

Claim 15. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 63 + wherein the microcapsule contains from 20 to 100 parts by weight of antimicrobial agent based upon 100 parts by weight of hydrophilic polymer.

Claim 16. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 63 + further comprises an inorganic discoloration inhibiting agent.

Claim 17. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 16 wherein said discoloration inhibiting agent is an ammonium compound.

Claim 18. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 16 wherein the antimicrobial agent comprises an ion-exchange type antimicrobial agent and said inorganic discoloration inhibiting agent comprises ion-exchanged ammonium ions contained within said antimicrobial agent.

Claim 19. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 63 + further comprising a dopant agent.

Claim 20. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 19, wherein said dopant is an inorganic sodium salt.

Claim 21. (Currently Amended): ~~A microcapsule~~ The antimicrobial additive according to claim 20, wherein said dopant is sodium nitrate.

Claims 22-37. (Cancelled)

Claim 38. (Currently amended): A polymer composition comprising a) an antimicrobial additive comprising 10 to 1000 parts by weight of at least one antimicrobial metal or metal ion-containing inorganic antimicrobial agent and 100 parts by weight of a hydrophilic polymer having a water absorption at equilibrium of at least 5% by weight, said antimicrobial additive agent in the form of microcapsules having an average diameter of about 2000μ or less and comprising multiple particles of the at least one inorganic antimicrobial agent dispersed in the hydrophilic polymer ~~an inorganic antimicrobial agent encapsulated in a hydrophilic polymer dispersed in~~ and b) a matrix polymer wherein the microcapsules are dispersed ~~present~~ as a discrete phase within the matrix polymer, ~~said hydrophilic polymer having a water absorption at equilibrium of at least 5% by weight.~~

Claim 39. (Cancelled)

Claim 40. (Currently Amended): The polymer composition of claim ~~39~~ 38 wherein the matrix polymer is an addition polymer selected from the group consisting of polypropylene, polyethylene, polystyrene, polyvinylchloride, ABS, SAN, epoxy resins and polytetrafluoroethylene.

Claim 41. (Withdrawn): The polymer composition of claim 39 wherein the matrix polymer is a condensation polymer selected from the group consisting of polyurethanes, polycarbonates, polyesters, polyamides, polyimides and silicone polymers.

Claim 42. (Original): The polymer composition of claim 38 wherein the matrix polymer is not a hydrophilic polymer.

Claim 43. (Withdrawn): The polymer composition of claim 38 wherein the matrix polymer is a hydrophilic polymer whose hydrophilic property is different from that of the hydrophilic polymer encapsulant used to make the microcapsule.

Claim 44. (Cancelled)

Claim 45. (Original): The polymer composition of claim 38 wherein the matrix polymer is a polymer blend.

Claims 46-50 (Cancelled)

Claim 51. (Currently Amended): The ~~microcapsule~~ antimicrobial additive according to claim ~~23~~ 63 wherein the mean average diameter is from about 15 μ to about 1000 μ .

Claim 52. (Currently Amended): The ~~microcapsule~~ antimicrobial additive according to claim ~~23~~ 63 wherein the mean average diameter is from about 50 μ to about 300 μ .

Claim 53. (Currently Amended): The polymer composition according to claim ~~58~~ 38 wherein the mean average diameter is from about 15 μ to about 1000 μ .

Claim 54. (Currently Amended): The polymer composition according to claim ~~58~~ 38 wherein the mean average diameter is from about 50 μ to about 300 μ .

Claim 55. (Currently Amended): The polymer composition according to claim 38 wherein the antimicrobial agent is selected from the group consisting of metal salts, antimicrobial water soluble glasses, antimicrobial metal ion-exchange type agents comprising a ceramic carrier having ion-exchanged antimicrobial metal ions and combinations thereof.

Claim 56. (Currently Amended): The polymer composition according to claim 38 wherein the antimicrobial agent is an antimicrobial metal ion-exchange type agent comprising a ceramic carrier selected from the group consisting of zeolites, hydroxyapatites, and zirconium phosphates having ion-exchanged antimicrobial metal ions.

Claims 57 - 59. (Cancelled)

Claim 60. (Currently Amended): The ~~microcapsule~~ antimicrobial additive according to claim ~~22~~ 64 wherein the antimicrobial agent is coated with the hydrophilic polymer and the coating has a thickness of 1 μ to 10 μ .

Claim 61. (Currently Amended): The polymer composition according to claim ~~57~~ 73 wherein the antimicrobial agent is coated with the hydrophilic polymer and the coating has a thickness of 1 μ to 10 μ .

Claim 62. (Cancelled)

Claim 63 (New): An antimicrobial additive comprising 10 to 1000 parts by weight of at least one antimicrobial metal or metal ion-containing inorganic antimicrobial agent and 100 parts by weight of a hydrophilic polymer having a water absorption at equilibrium of at least 5% by weight, said antimicrobial additive in the form of a microcapsule a) having a mean average diameter of 2000 μ or less and b) containing multiple particles of the at least one inorganic antimicrobial agent dispersed in the hydrophilic polymer.

Claim 64. (New) An antimicrobial additive comprising a discrete particle of an antimicrobial metal or metal ion-containing inorganic antimicrobial agent encapsulated in a hydrophilic polymer having a water absorption at equilibrium of at least 5% by weight, the thickness of the hydrophilic polymer coating being from about 1 μ to about 15 μ , said antimicrobial additive having a mean average particle size of less than 300 μ and a weight ratio of the antimicrobial agent to the hydrophilic polymer of from 1:100 to 1000:100.

Claim 65. (New) The antimicrobial additive according to claim 64 wherein the inorganic antimicrobial agent is selected from the group consisting of metal salts, antimicrobial water soluble glasses, antimicrobial metal ion-exchange type agents comprising a ceramic carrier having ion-exchanged antimicrobial metal ions and combinations thereof.

Claim 66. (New): The antimicrobial additive according to claim 65 wherein the antimicrobial metal or metal ion is selected from the group consisting of silver, copper, zinc, tin, gold, mercury, lead, iron, cobalt, nickel, manganese, arsenic, antimony, bismuth, barium, cadmium, chromium, thallium and combinations thereof.

Claim 67. (New): The antimicrobial additive according to claim 66 wherein the antimicrobial metal or metal ion is silver, zinc, copper or a combination of any two or all three of the foregoing.

Claim 68. (New): The antimicrobial additive according to claim 64 wherein the ceramic carrier is selected from the group consisting of zeolites, hydroxyapatites, and zirconium phosphates.

Claim 69. (New): The antimicrobial additive according to claim 64 wherein the antimicrobial agent is a zeolite that contains silver ions alone or in combination with zinc ions or copper ions or both.

Claim 70. (New): The antimicrobial additive according to claim 64 wherein the hydrophilic polymer is a polymer with water absorption at equilibrium of at least about 20% by weight.

Claim 71. (New): The antimicrobial additive according to claim 64 wherein the hydrophilic polymer is selected from the group consisting of polyhydroxyethyl methacrylate, polyacrylamide, N-vinyl-2-pyrrolidinone, polysaccharides, polylactic acid, polyamide and polyurethane.

Claim 72. (New): The antimicrobial additive according to claim 64 wherein the hydrophilic polymer is polyurethane.

Claim 73. (New): A polymer composition comprising a) an antimicrobial additive comprising a discrete particle of an antimicrobial metal or metal ion-containing inorganic antimicrobial agent encapsulated in a hydrophilic polymer having a water absorption at equilibrium of at least 5% by weight, the thickness of the hydrophilic polymer coating being from about 1 μ to about 15 μ , said antimicrobial additive having a mean average particle size of less than 300 μ and a weight ratio of the antimicrobial agent to the hydrophilic polymer of from 1:100 to 1000:100 and b) a matrix polymer wherein the antimicrobial additive particles are dispersed as a discrete phase within the matrix polymer.

Claim 74. (New): The antimicrobial additive according to claim 73 wherein the inorganic antimicrobial agent is selected from the group consisting of metal salts, antimicrobial water soluble glasses, antimicrobial metal ion-exchange type agents comprising a ceramic carrier having ion-exchanged antimicrobial metal ions and combinations thereof.

Claim 75. (New): The antimicrobial additive according to claim 74 wherein the ceramic carrier is selected from the group consisting of zeolites, hydroxyapatites, and zirconium phosphates.

Claim 76. (New): The antimicrobial additive according to claim 74 wherein the antimicrobial metal or metal ion is selected from the group consisting of silver, copper, zinc, tin, gold, mercury, lead, iron, cobalt, nickel, manganese, arsenic, antimony, bismuth, barium, cadmium, chromium, thallium and combinations thereof.

Claim 77. (New): The antimicrobial additive according to claim 76 wherein the antimicrobial metal or metal ion is silver, zinc, copper or a combination of any two or all three of the foregoing.

Claim 78. (New): The antimicrobial additive according to claim 73 wherein the antimicrobial agent is a zeolite that contains silver ions alone or in combination with zinc ions or copper ions or both.

Claim 79. (New): The antimicrobial additive according to claim 73 wherein the hydrophilic polymer is a polymer with water absorption at equilibrium of at least about 20% by weight.

Claim 80. (New): The antimicrobial additive according to claim 73 wherein the hydrophilic polymer is selected from the group consisting of polyhydroxyethyl methacrylate, polyacrylamide, N-vinyl-2-pyrrolidinone, polysaccharides, polylactic acid, polyamide and polyurethane.

Claim 81. (New): The polymer composition of claim 73 wherein the matrix polymer is an addition polymer selected from the group consisting of polypropylene, polyethylene, polystyrene, polyvinylchloride, ABS, SAN, epoxy resins and polytetrafluoroethylene.

Claim 82. (New): The polymer composition of claim 73 wherein the matrix polymer is a condensation polymer selected from the group consisting of polyurethanes, polycarbonates, polyesters, polyamides, polyimides and silicone polymers.

Claim 83. (New): The polymer composition of claim 73 wherein the matrix polymer is a hydrophilic polymer whose hydrophilic property is different from that of the hydrophilic polymer encapsulant used to make the microcapsule.